

CLAIMS

1. A refrigerator, comprising:

5 a Stirling refrigerating machine (1) having a high-temperature heat radiation portion (2) and a low-temperature heat absorption portion (3) and cooling a freezing compartment (22); and

a compressor (11) for circulating a first refrigerant through a first circulation circuit (5) including a cooling compartment evaporator (12); wherein

10 said high-temperature heat radiation portion (2) is in contact with said first circulation circuit (5).

2. The refrigerator according to claim 1, wherein said high-temperature heat radiation portion (2) is in contact with piping of said first circulation circuit (5) on its way from said cooling compartment evaporator (12) back to said compressor (11).

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3. The refrigerator according to claim 1, wherein said high-temperature heat radiation portion (2) is in contact with a heat radiation portion cooling evaporator that is formed in said first circulation circuit (5) on its way from said cooling compartment evaporator (12) back to said compressor (11).

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4. The refrigerator according to claim 1, comprising:

a cooling compartment cooling fan (23) for transferring cold heat of said cooling compartment evaporator (12) to a cooling compartment (21); and

25 control means for stopping said cooling compartment cooling fan (23) when detecting that a temperature of said freezing compartment (22) has become a set value or higher.

5. The refrigerator according to claim 1, wherein

said first circulation circuit (5) includes a main circuit (7a) and an auxiliary circuit (7b),

said auxiliary circuit (7b) has an auxiliary refrigerant expansion portion (13b) and a heat radiation portion cooling evaporator (19) formed downstream of said auxiliary refrigerant expansion portion (13b), and has its inlet connected to branch means that is formed in piping of said main circuit (7a) on its way from said compressor (11) to said cooling compartment evaporator (12), and

said high-temperature heat radiation portion (2) is in contact with said heat radiation portion cooling evaporator (19).

6. The refrigerator according to claim 5, wherein a three-way valve (20) capable of opening/closing its side directed to said cooling compartment evaporator (12) and its side directed to said heat radiation portion cooling evaporator (19) is arranged as said branch means.

7. The refrigerator according to claim 6, comprising control means for closing the side of said three-way valve (20) directed to said cooling compartment evaporator (12) when detecting that a temperature of a cooling compartment (21) has become a set value or lower.

8. The refrigerator according to claim 6, comprising control means for closing the side of said three-way valve (20) directed to said heat radiation portion cooling evaporator (19) when detecting that a temperature of said freezing compartment (22) has become a set value or lower.

9. The refrigerator according to claim 6, comprising control means for closing the side of said three-way valve (20) directed to said cooling compartment evaporator (12) and opening the side of said three-way valve (20) directed to said heat radiation portion

cooling evaporator (19) when detecting that a temperature of said freezing compartment (22) has become a set value or higher.

10. The refrigerator according to claim 6, comprising:

5 a cooling compartment cooling fan (23) for transferring cold heat of said cooling compartment evaporator (12) to a cooling compartment (21); and

control means for causing said cooling compartment cooling fan (23) to rotate by detecting humidity of said cooling compartment (21) in the state where the side of said three-way valve (20) directed to said cooling compartment evaporator (12) is closed.

11. The refrigerator according to claim 1, comprising control means for decreasing the number of revolutions of said compressor (11) and increasing output of said Stirling refrigerating machine (1) when detecting that a temperature of said cooling compartment evaporator (12) has become a set value or lower.

12. The refrigerator according to claim 1, comprising control means for controlling the number of revolutions of said compressor (11) in response to an outside air temperature and a temperature of a cooling compartment (21).